

REMARKS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office Action, and the following remarks are presented for the Examiner's consideration.

Claims 1-3, 9-10 and 12-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over the cited publication entitled "High-Frequency, Long-Wavelength Resonant-Cavity-Enhanced InGaAs MSM Photodetectors" (hereinafter "Strittmatter") in view of U.S. Patent No. 5,945,720 to Itatani. For the following reasons, the rejection is respectfully traversed.

Claim 1 is not rendered obvious by the teachings of Strittmatter in view of Itatani. Specifically, Strittmatter does not teach or suggest "the light to be detected is incident onto the device through the electrodes network, the optical characteristics of this second mirror being determined by the geometric dimensions of said conducting strips, the distance separating the first mirror from the second mirror being determined to obtain a Fabry-Pérot type resonance for incident light between these two mirrors," as specified in Claim 1.

On the contrary, in Strittmatter *the light to be detected is not incident onto the device through the electrodes network* forming a highly reflecting top mirror. See page 146, § 1. Instead, the light to be detected is incident onto the device only in the case where *there is no top mirror*. See page 147, Figure 4, legend of the dashed line (i.e., "dashed line: frontside illumination without top mirror").

Indeed, Strittmatter teaches on page 145, § "Design and fabrication," that the device is illuminated through the InP substrate (not the top mirror) in order to avoid the loss of responsivity due to the blocking effect of the opaque interdigitated finger electrodes, which occurs when the MS detector is illuminated from the top (i.e., though the top mirror). In other words, a person of ordinary skill in the art applying the teaching of Strittmatter is in no way motivated to illuminate the top mirror.

Moreover, the combination of the electrodes network with the specific illumination as claimed is not obviously derived by applying the teachings of Itatani to the teachings of Strittmatter. Itatani teaches that the increase of the operating speed of the device is obtained by reducing the space between two consecutive electrodes (one can note that this technical effect is

specified in the application, page 1, paragraph [0002]). However, this does not teach or suggest the combination of the present invention.

Thus, by applying the teachings of Itatani to the teachings of Strittmatter, a person of ordinary skill in the art is motivated to reduce the space between two consecutive electrodes, *and to illuminate the device from the rear of the device, which is different from the invention as claimed.*

Moreover, the claimed features of the present application result in electrodes being placed closely to each other without masking the light. In addition, the electrodes play a fundamental role in controlling the reflectivity of the second mirror (see page 8, line 29 to page 9, line 3 of the specification). The shortness of the paths followed by the photo carriers to be collected by the electrodes assures that this device has an *extremely fast intrinsic behavior* (response time less than one picosecond) while resonant coupling with incident light assures *a high external quantum efficiency* (a gain of about a factor of 10) (see page 4, lines 6-13 of the specification). In contrast to prior art structures, the claimed structure results in *no compromise* between efficiency and speed (see page 1, lines 18-19 of the specification).

Accordingly, the combination of Strittmatter and Itatani would not have lead a person of ordinary skill in the art to the present invention. Therefore, claim 1 is not rendered obvious by the combination of the teachings of Strittmatter and Itatani. Thus, claim 1 and its dependent claims 2, 3, 9, 10 and 12-15 are patentable over the prior art of record.

Claims 4-6 were rejected under 35 U.S.C. 103(a) over Strittmatter in view of Itatani and U.S. Patent No. 5,663,639 to Brown. Brown does not teach or suggest the limitations of which Strittmatter and Itatani are deficient, as described above with regard to claim 1. Therefore, since claims 4-6 depend from claim 1, they are patentable for the same reasons.

Claims 7-8 were rejected under 35 U.S.C. 103(a) over Strittmatter in view of Itatani and U.S. Patent No. 6,528,827 to Henning. Henning does not teach or suggest the limitations of which Strittmatter and Itatani are deficient, as described above with regard to claim 1. Therefore, since claims 7-8 depend from claim 1, they are patentable for the same reasons.

In consideration of the foregoing analysis, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the examiner is invited to

initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No. REG-37392.

Respectfully submitted,
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